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Donald L. Bartels
Coudert Brothers LLP
Two Palo Alto Square
3000 El Camino Real, Fourth Floor
Palo Alto,, CA 94306-2121

EXAMINER	
NATNAEL, PAULOS M	

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2614	

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16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/693,351	Applicant(s) DING ET AL.	
	Examiner Paulos M. Natnael	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-6,8-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6,8-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **8-13** are rejected under 35 U.S.C. 102(e) as being anticipated by **Adams** et al., U.S. Pat. No. 6,380,978.

Considering claim **8,** a digital video display system, comprising:

a) a navigation module operative to isolate an input video signal present in a digital medium is met by video data buffer 42, fig.3;

b) a decoder operative to separate said input video signal into a plurality of video frames is met by the De-interlacing stage 1, fig.4; (see also fig.5 and col. 9, lines 24-35+)

c) a detection module <u>for detecting if each said video frame matches an entry in a predetermined table</u> which provides the type of processing to be performed on said video frame in response to the current video frame position, is met by Deinterlacers 70 and 80, Fig.4, which performs frame sequence detection or frequency detection,

determining *whether field difference processing should be performed* using the FIFO/Addressing and separating circuits 90 as storage or memory. (see Fig.4, which clearly illustrates also that de-interlacers 70 and 80 perform progressive frame sequence detection and vertical frequency detection, respectively).

d) a processing module operative to provide a filtered video frame in response to information contained in said table, wherein said filtered video frame is capable of being displayed on a progressive display device is met by video output processor 60, fig.4, which performs horizontal scaling, color space conversion, dithering, and gamma, contract and brightness processing in order to ready the RGB video output signals for display on a display device.

Considering claim **9**, wherein said processing unit further comprises a first processing module operative to provide a digital video frame that is a concatenation of fields of an input data frame, and a second processing module operative to provide a digital video frame containing field segments having values based on adjacent field segments is met by the output of FIFOs 136, 138 140 to field assembly 150, which in turn outputs a frame 152. (see also fig.5)

Considering claim **10,** The system of Claim 8, wherein said detection module is operative to determine the type of processing to be performed on said video frame

based on field data of a predetermined number of prior video frames and said video frame is met by deinterlacers 70 and 80, fig.4. (see also fig.5)

Considering claim **11**, the claimed "wherein the predetermined number of prior video frames is three", is met by Fig. 5;

Considering claim **12,** Adams et al disclose the following claimed subject matter, note;
a) obtaining current video information from an input video signal, is met by video data buffer 42, fig.3;
b) separating said input video signal into plurality of video frames, is met by fig. 5, which shows the input signals is separated into fields and then into frames.

c) a detecting if each said video frame matches an entry in predetermined table, for specifying a processing type, is met by Deinterlacers 70 and 80, Fig.4, which performs frame sequence detection or frequency detection, determining *whether field difference processing should be performed* using the FIFO/Addressing and separating circuits 90 as storage or memory. (see Fig.4, which clearly illustrates also that de-interlacers 70 and 80 perform progressive frame sequence detection and vertical frequency detection, respectively).

d) generating a filtered video frame in response to information contained in said predetermined table, is met by video output processor 60, fig.4, which generates a

video signal to be displayed on the display device in response to information contained in the FIFO and addressing and sequencing module 90.

Considering claim **13**, the processing method of Claim 12, wherein said predetermined parameters are frame dependent.

Regarding claim 13, see rejection of claim 8(c) and (d).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **1,2, and 4-6, 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Adams** et al., U.S. Pat. No. 6,380,978.

Considering claim **1**, Adams et al disclose the following claimed subject matter, note; a) the claimed navigation unit operative to provide an input video signal from a digital media element is met by video data buffer 42, (fig.3).

b) the claimed a decoder operative to separate said input video signal into a plurality of frames, each frame containing a series of fields is met by the Deinterlacing stage 1, fig.4; (see also fig.5 and col. 9, lines 24+)

c) a processing unit operative to perform on said current frame the processing specified by said detection unit, is met by video output processor 60, fig.4;

Except for;

d) the claimed detection unit for detecting if each said frame matches an entry in a predetermined look-up table for specifying a first type of processing if there is a match and for specifying a second type processing if there is not a match;

Regarding d), Adams discloses a deInterlacer stage 1 (70) which performs progressive frame sequence detection and field difference processing, and a deInterlacer stage 2 (80) performing vertical frequency detection, signal reversal detection and diagonal feature detection. The SDRAM controller controls data going in and out of the SDRAMs. Furthermore, Adams discloses detecting current, last, and next fields and processing either field difference processing or frequency detection (fig.7). Therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the reference of Adams by providing frame by frame processing instead of the field by field processing that Adams discloses in Fig.6 and fig. 7, so that the frame by frame processing would make the processing easier and/or faster on the system controller or processor.

Considering claim **2,** wherein said input video signal is isolated from a digital versatile disk (DVD) inserted into said navigation unit, is met by DVD Media Transport 22, fig. 3, which outputs the input video to video data buffer 42.

Considering claim **4, t**he device of Claim 1, wherein said second type of processing comprises generating each said frame from the field data of a predetermined number of prior video frames and said frame, is met by deinterlacers 70 and 80, (fig.4). (see also Fig.5)

Considering claim **5, t**he device of Claim 4, wherein said predetermined number of prior frames is three is met by Fig. 5;

Considering claim **6,** the device of Claim 2, wherein said first type of processing comprises providing either a frame that is a concatenation of said fields of an input data frame, or a frame containing field segments having values based on adjacent field segments as specified by said look-up table entry, is met by the output of FIFOs 136, 138 140 to field assembly 150, which in turn outputs a frame 152. (see also fig.5)

Considering claim **16**, the device of claim 1, wherein said detection unit is operative to determine the type of processing to be performed on a predetermined video frame signal based on a selection by a user of said digital video display device.

Regarding claim 16, see rejection of claim 1(d).

5. Claims **14 and 1**5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Callahan** U.S. Pat. No. 6,380,985.

Considering claim **14**, Callahan discloses all claimed subject matter:

a) separating a video image frame into its component fields is met by step 100 , fig. 3;

b) determining which of said component fields is the first component field is met by step 102, fig.3;

d) generating a combined video image frame signal based only on said first component field, is met by step 106, fig.3;

e) wherein each component field comprises a plurality of pixel lines, is met by FIG. 8 which illustrates "a flow diagram of the processing steps within the field-differencing module 154 in accordance with one embodiment of the present invention. A Next array of pixels 174, which is a subset of the Next Field 160, and a Last array of pixels 176, which is a subset of the Last Field 162 are the inputs to a differencer 178. The Next and Last pixel arrays 174 and 176 can be viewed as windows moving across their respective fields. The "window" is moved from left to right and top to bottom. Each time the windows are moved, a new difference is computed. The result of the difference operation 178 is an array of differences 180." (col. 11, 27-37)

Except for;

c) discarding the second component field of said video image frame;

Regarding c), Callahan discloses steps 102/104, fig.3 where the methods of resizing by removing one field of scan lines and resizing and filtering the remaining field of scan lines are illustrated. Furthermore, Callahan teaches that "It is immaterial which field is eliminated, and either one can be discarded." (col. 4, lines 47-50) The fact that either one can be discarded is the strength/flexibility of the methods or teachings of Callahan. In other words, any one of those fields can be discarded and the processing is performed well despite the method employed. Therefore, it would be an obvious matter of design choice to modify the system of Callahan by having to discard the second component fields of each video frame, because Callahan teaches that it is immaterial which field is eliminated, and that either one can be discarded.

Considering claim **15**, Callahan discloses all claimed subject matter:

a) generating a pixel line having a value comprising the average each adjacent pair of said pixel lines, is met by the disclosure that "The resize and filter equation [1] averages pairs of sequential lines....." (see col. 5, lines 8-22)

b) providing said generated pixel line between said corresponding adjacent pair of pixel lines is met by the disclosure that "averaging two sequential lines has the effect of "blurring" adjacent lines to compensate for missing interlaced lines of the dropped field." (col. 5, lines 8-22).

Response to Arguments

Applicant's Argument

a) Adams does not teach or suggest detecting matches of entries in a predetermined look-up table and for specifying a first type of processing

b) Adams et al does not disclose "detecting matches of entries in a predetermined look-up table for specifying a type of processing. Applicants submit that the disclosure of FIFIOs for accommodating the reading and writing of video fields into memory in Adams, et al does not teach or suggest a predetermined look-up table and use thereof for specifying a type of processing.

c) Moreover, the method of claim 14 is designed for a different purpose that the method discloses in Callahan. The method of claim 14 if for removing artifacts in a video signal. In contrast, the method of Callahan is for resizing a video signal. Applicants submit that claim 14 is not obvious based on Callahan.

d) Regarding claim 15, Callahan discloses having a resultant frame that is resized by using only average lines such that none of the original lines are used. (col. 4, liens 47-55)... Callahan does not teach or suggest using the original lines as part of a resultant frame.

Examiner Response

a) Given reasonably broad interpretation, a look-up table is a memory or storage device such as the SDRAM disclosed in the reference of Adams et al. The SDRAM controller controls data going in and out of the SDRAMs. Adams teaches that the deInterlacer stage 1 (70) performs progressive frame sequence detection and field difference processing, and a deInterlacer stage 2 (80) performing vertical frequency detection, signal reversal detection and diagonal feature detection. Adams also teaches the FIFO addressing and sequencing 90 attached to the de-interlacer stages. Furthermore, Adams discloses detecting current, last, and next fields and processing either field difference processing or frequency detection (fig.7).

b) See Part (A) above.

c) Callahan teaches resizing and anti-flicker filtering in reduced-size video images. Thus, the system of Callahan is NOT LIMITED to resizing only. It's applicable in anti-flicker filtering or processing as well. Therefore, applicant's argument that Callahan's teaching of discarding any field is immaterial, is definitely applicable and renders obvious the claimed invention of claim 14.

c) Contrary to Applicant's assertion, the disclosure on Col. 4 lines 47-55 of Callahan, does not recite "having a resultant frame that is resized by using **only** average lines such that **none** of the original lines are used." Callahan instead teaches that "It is

immaterial which field is eliminated, and either one can be discarded." (col. 4, lines 47-50) In other words, it is not true that none of the original lines are being used, if one of the field is being eliminated. Argument therefore is unpersuasive.

[Note: The claimed method of averaging each adjacent pair of pixel lines and, providing the generated pixel line between the corresponding adjacent pair of pixel lines, is notoriously well known in the art where such interpolation processing is routinely performed.]

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
May 14, 2004

PAULOS M. NATNAEL
PATENT EXAMINER